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Mar 27, 1991

DERWENT-ACC-NO: 1991-088267
DERWENT-WEEK: 199803
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TITLE: Protein based compsn. with optimised amino acid ratios - for feeding premature babies and supplementing breast milk

INVENTOR: GEORGI, G; HARZER, G ; SAWATZKI, G ; SCHWEIKHARDT, F ; SCHWEIKHAR, F

PRIORITY-DATA: 1989DE-3928418 (August 28, 1989)

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PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/> EP 418593 A	March 27, 1991		025	
<input type="checkbox"/> EP 418593 B2	December 10, 1997	G	031	A23L001/305
<input type="checkbox"/> PT 95114 A	April 18, 1991		000	
<input type="checkbox"/> FI 9004074 A	March 1, 1991		000	
<input type="checkbox"/> DD 297304 A5	January 9, 1992		000	A23C011/06
<input type="checkbox"/> EP 418593 B1	November 3, 1993	G	038	A23L001/305
<input type="checkbox"/> DE 59003330 G	December 9, 1993		000	A23L001/305
<input type="checkbox"/> ES 2062231 T3	December 16, 1994		000	A23L001/305

INT-CL (IPC): A23C 9/13; A23C 9/152; A23C 11/06; A23J 1/20; A23J 3/04; A23J 3/14; A23L 1/30; A23L 1/305

ABSTRACTED-PUB-NO: EP 418593A

BASIC-ABSTRACT:

Protein, peptide and amino acid (AA) mixt, based on proteins (or their hydrolysates) digestible by infants and free AA comprises (all g per 100g total AA, calculated from the respective mol.wts. of AA, each with deduction of water): Asp+Asn, 7.69-10.41; Thr, 3.62-4.90; Ser, 3.33-4.51, Glv + Gln, 15.71-21.25; Pro, 8.7-11.76; Gly, 1.27-1.73; Ala, 2.53-3.43; Cys + (Cys)2, 1.45-2.17; Val, 4.56-6.16; Met, 1.42-2.12; Ile, 5.58-7.54; Leu, 9.04-12.24; Tyr, 3.98-5.38; Phe, 3.19-4.31; Mis, 2.49-3.37; Lys, 6.56-8.88; Arg, 1.99-2.69 and Try, 1.72-2.32.

The AA compsn. is (same order as above) 7.95-9.72; 3.92-4.90, 3.87-4.50; 16.34-20.70; 9.16-11.20; 1.35-1.65; 2.70-3.31; 1.58-2.01, 4.70-5.73, 1.74-2.12; 5.97-7.29, 9.42-11.51; 4;14 -5.00, 3.40-4.15; 2.67-3.27; 6.83-8.34, 2.30-2.69 and 1.84-2.26.

USE/ADVANTAGES - These compsns. leave an AA compsn. very similar to that of the nutritive component of breast milk proteins, so are useful as the protein

components for supplements to breast milk and for making feeding compsns. for premature babies and other infants. Babies fed with this compsn. do not develop imbalances in serum amino acids, which can happen in babies fed with known formulations (where the AA compsn. matches that of the total proteins including non-digestible immunoglobulins, etc.) in breast milk).

ABSTRACTED-PUB-NO:

EP 418593B

EQUIVALENT-ABSTRACTS:

Protein, peptide and amino acid (AA) mixt, based on proteins (or their hydrolysates) digestible by infants and free AA comprises (all g per 100g total AA, calculated from the respective mol.wts. of AA, each with deduction of water): Asp+Asn, 7.69-10.41; Thr, 3.62-4.90; Ser, 3.33-4.51, Glv + Gln, 15.71-21.25; Pro, 8.7-11.76; Gly, 1.27-1.73; Ala, 2.53-3.43; Cys + (Cys)2, 1.45-2.17; Val, 4.56-6.16; Met, 1.42-2.12; Ile, 5.58-7.54; Leu, 9.04-12.24; Tyr, 3.98-5.38; Phe, 3.19-4.31; Mis, 2.49-3.37; Lys, 6.56-8.88; Arg, 1.99-2.69 and Try, 1.72-2.32.

The AA compsn. is (same order as above) 7.95-9.72; 3.92-4.90, 3.87-4.50; 16.34-20.70; 9.16-11.20; 1.35-1.65; 2.70-3.31; 1.58-2.01, 4.70-5.73, 1.74-2.12; 5.97-7.29, 9.42-11.51; 4;14 -5.00, 3.40-4.15; 2.67-3.27; 6.83-8.34, 2.30-2.69 and 1.84-2.26.

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ABSTRACTED-PUB-NO: EP 418593A

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CHOSEN-DRAWING: Dwg.0/0 Dwg.0/0

hydrolysed protein, esp. 20-30% lactalbumin hydrolysate, 60-70% partially hydrolysed sodium caseinate and 8-14% L-arginine, supplemental L-arginine providing 1-3% of the total calories in the prod.; and (b) a lipid system having a ratio of linoleic acid to alpha-linolenic acid in the range of 3.5:1 to 5.5:1; the prod. having a caloric density in the range 1.2-1.5 kcal/ml and a calorie to nitrogen ratio in the range 112:1 to 145:1. Percentages are by wt..

USE - The prod. may be taken by persons suffering from trauma or subjected to surgery. It is suitably administered by a feeding tube, but may also be drunk in admixture with a flavouring system. It has a moderate osmolality of about 425 Mosm/kg water, even though it contains partially hydrolysed proteins, and has a greater caloric density than known formulations. It has a viscosity of not greater than 55 cps, pref. 25-45 cps. The moderate osmolality reduces the risk of causing osmotic diarrhea

ABSTRACTED-PUB-NO:

US 5221668A
EQUIVALENT-ABSTRACTS:

The liq. nutritional prod. comprises (a) a protein system comprising partially hydrolysed protein, esp. 20-30% lactalbumin hydrolysate, 60-70% partially hydrolysed sodium caseinate and 8-14% L-arginine, supplemental L-arginine providing 1-3% of the total calories in the prod.; and (b) a lipid system having a ratio of linoleic acid to alpha-linolenic acid in the range of 3.5:1 to 5.5:1; the prod. having a caloric density in the range 1.2-1.5 kcal/ml and a calorie to nitrogen ratio in the range 112:1 to 145:1. Percentages are by wt..

USE - The prod. may be taken by persons suffering from trauma or subjected to surgery. It is suitably administered by a feeding tube, but may also be drunk in admixture with a flavouring system. It has a moderate osmolality of about 425 Mosm/kg water, even though it contains partially hydrolysed proteins, and has a greater caloric density than known formulations. It has a viscosity of not greater than 55 cps, pref. 25-45 cps. The moderate osmolality reduces the risk of causing osmotic diarrhea

ABSTRACTED-PUB-NO: EP 630181B

EQUIVALENT-ABSTRACTS: The liq. nutritional prod. comprises (a) a protein system comprising partially hydrolysed protein, esp. 20-30% lactalbumin hydrolysate, 60-70% partially hydrolysed sodium caseinate and 8-14% L-arginine, supplemental L-arginine providing 1-3% of the total calories in the prod.; and (b) a lipid system having a ratio of linoleic acid to alpha-linolenic acid in the range of 3.5:1 to 5.5:1; the prod. having a caloric density in the range 1.2-1.5 kcal/ml and a calorie to nitrogen ratio in the range 112:1 to 145:1. Percentages are by wt.. USE - The prod. may be taken by persons suffering from trauma or subjected to surgery. It is suitably administered by a feeding tube, but may also be drunk in admixture with a flavouring system. It has a moderate osmolality of about 425 Mosm/kg water, even though it contains partially hydrolysed proteins, and has a greater caloric density than known formulations. It has a viscosity of not greater than 55 cps, pref. 25-45 cps. The moderate osmolality reduces the risk of causing osmotic diarrhea US 5221668A

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File: USPT

Jun 22, 1993

US-PAT-NO: 5221668DOCUMENT-IDENTIFIER: US 5221668 A**** See image for Certificate of Correction ****

TITLE: Nutritional product for trauma and surgery patients

DATE-ISSUED: June 22, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Henningfield; Mary F.	Columbus	OH		
McEwen; John W.	Hilliard	OH		
Miller; Robert H.	Worthington	OH		

US-CL-CURRENT: 514/23; 424/439, 424/442, 426/601, 426/606, 426/607, 426/656,
426/658, 426/800, 426/801, 426/810, 514/2, 514/878, 514/909, 514/911, 514/921

CLAIMS:

We claim:

1. A liquid nutritional product comprising: a protein system comprising by weight about 20-30% lactalbumin hydrolysate, about 60-70% partially hydrolyzed sodium caseinate, and about 8-14% L-arginine, supplemental L-arginine providing about 1-3% of the total calories in the nutritional product; and a lipid system having a ratio of linoleic acid to alpha linoleic acid in the range of about 3.5:1 to about 5.5:1, said nutritional product having a caloric density in the range of about 1.2 to 1.5 kcal/ml and a calorie to nitrogen ratio of about 112:1 to about 145:1.

2. A liquid nutritional product according to claim 1 wherein the nutritional product has a caloric density of about 1.3 kcal/ml.

3. A liquid nutritional product according to claim 1 wherein about 18-24% of the calories are provided by protein, about 20-30% of the calories are provided by lipids, and about 46-62% of the calories are provided by carbohydrates.

4. A liquid nutritional product according to claim 2 wherein about 18-24% of the calories are provided by protein, about 20-30% of the calories are provided by lipids, and about 46-62% of the calories are provided by carbohydrates.

5. A liquid nutritional product according to claim 1 wherein the lipid system comprises by weight about 35-55% canola oil, about 30-50% medium chain triglycerides and about 5-35% corn oil.

6. A liquid nutritional product according to claim 2 wherein the lipid system comprises by weight about 35-55% canola oil, about 30-50% medium chain triglycerides and about 5-35% corn oil.
7. A liquid nutritional product according to claim 3 wherein the lipid system comprises by weight about 35-55% canola oil, about 30-50% medium chain triglycerides and about 5-35% corn oil.
8. A liquid nutritional product according to claim 4 wherein the lipid system comprises by weight about 35-55% canola oil, about 30-50% medium chain triglycerides and about 5-35% corn oil.
9. A liquid nutritional product according to any one of claims 1-8 further comprising hydrolyzed corn starch as a carbohydrate source.
10. A liquid nutritional product comprising:
- (a) a protein system which provides about 18-24% of the calories provided by the product, said protein system including (i) partially hydrolyzed protein and (ii) supplemental L-arginine in an amount sufficient to provide about 1-3% of the total calories provided by the product;
 - (b) a lipid system which provides about 20-30% of the calories provided by the product, said lipid system having a ratio of linoleic acid to alpha linoleic acid in the range of about 3.5:1 to about 5.5:1; and
 - (c) carbohydrates which provide about 46-62% of the calories provided by the product, the product having a caloric density in the range of about 1.2 to 1.5 kcal/ml a calorie to nitrogen ratio of about 112:1 to about 145:1, and having the following amino acid profile:

AMINO ACID	g/100 g protein
Histidine	1.7-2.4
Isoleucine	4.1-5.1
Leucine	7.9-12.5
Lysine	5.5-9.4
Methionine	2.1-2.9
Phenylalanine	3.5-4.9
Threonine	3.9-5.3
Tryptophan	1.1-2.0
Valine	4.8-6.5
Alanine	2.9-4.4
Arginine (Includes inherent arginine)	9.0-14.5
Aspartic Acid	6.5-10.00
Cystine	0.7-2.2
Glutamic Acid	17.5-20.5
Glycine	1.5-1.9
Proline	6.5-9.0
Serine	4.8-5.1
Tyrosine	3.7-5.1.

11. A liquid nutritional product according to claim 10 wherein said product has the following fatty acid profile:

FATTY ACID	% Total Fatty Acids
Linoleic (18:2.omega.6)	19-24
.alpha.-Linolenic (18:3.omega.3)	3.5-12
Caprylic (8:0)	18-26
Capric (10:0)	10.2-15.5
Lauric (12:0)	trace-0.4
Myristic (14:0)	trace-0.7
Palmitic (16:0)	4.0-7.2
Stearic (18:0)	trace-1.9
Oleic (18:1.omega.9)	20-55
Arachidic (20:0)	trace-0.6
Eiosenoic (20:1.omega.9)	trace-0.6
Others	trace-10.

12. A liquid nutritional product according to claim 10 wherein the product has a caloric density of about 1.3 kcal/ml.

13. A liquid nutritional product according to claim 11 wherein the product has a caloric density of about 1.3 kcal/ml.

14. A liquid nutritional product according to claims 10 wherein the product has viscosity of not greater than 55 cps.

15. A liquid nutritional product according to claim 11 wherein the product has a viscosity of not greater than 55 cps.

16. A liquid nutritional product according to claim 12 wherein the product has a viscosity of not greater than 55 cps.

17. A liquid nutritional product according to claim 13 wherein the product has a viscosity of not greater than 55 cps.

18. A liquid nutritional product according to one of claims 10-17 further comprising a source of dietary fiber.

19. A liquid nutritional product comprising

(a) a protein system comprising by weight about 20-30% lactalbumin hydrolysate, about 62-68% partially hydrolyzed sodium caseinate, and about 8-12% L-arginine, supplemental L-arginine providing about 1-3% of the total calories in the nutritional product;

(b) a lipid system comprising by weight about 35-45% canola oil, about 35-45% medium chain triglycerides, and about 10-30% corn oil, the lipid system providing a ratio of linoleic acid to alpha linoleic acid in the range of about 3.5:1 to about 5.5:1; and

(c) a carbohydrate system comprising hydrolyzed corn starch, the nutritional product having (i) a caloric density of about 1.3 kcal/ml, (ii) a caloric distribution such that about 18-24% of the calories are provided by proteins, about 20-30% of the calories are provided by lipids and about 46-62% of the calories are provided by carbohydrates, (iii) the nutritional product has a viscosity of not greater than 55 cps, and (iv) a calorie to nitrogen ratio of about 112:1 to about 145:1.

20. A liquid nutritional product according to claim 19 further comprising carrageenan.

21. A liquid nutritional product according to claim 20 wherein a quantity of said product sufficient to provide 1,500 kcal will provide at least 100% of the U.S. RDA of Vitamin A, Vitamin D, Vitamin E, Vitamin K, Vitamin C, Folic Acid, Thiamin, Riboflavin, Vitamin B-6, Vitamin B-12, Niacin, Biotin, Pantothenic Acid, Calcium, Phosphorus, Magnesium, Iodine, Copper, Zinc and Iron.

22. A liquid nutritional product according to claim 21 wherein a quantity of said product sufficient to provide 1,500 kcal will provide at least 100% of the U.S. RDA of Vitamin A, Vitamin D, Vitamin E, Vitamin K, Vitamin C, Folic Acid, Thiamin, Riboflavin, Vitamin B-6, Vitamin B-12, Niacin, Biotin, Pantothenic Acid, Calcium, Phosphorus, Magnesium, Iodine, Copper, Zinc and Iron.

23. A liquid nutritional product according to claim 20 further comprising beta carotene.

24. A liquid nutritional product according to claim 21 further comprising beta carotene.

25. A liquid nutritional product according to claim 22 further comprising beta carotene.

26. A liquid nutritional product according to claim 23 further comprising beta carotene.

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